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University of Groningen
Science Shop of Economics, Management & Organization
Coördinators: drs. E. Kamphuis and drs. F.J. Sijtsma
Secretariat: H.W. Janssen
Supervisory lecturers: dr. H.F. Lanting, prof. dr. P.H. Pellenbarg
Supervisor Science Shop: drs. F.J. Sijtsma
Inquirer: Energy Delta Institute

Address:
University of Groningen, Science Shop of Economics, Management & Organization
PO box 800
9700 AV Groningen, The Netherlands
tel: 050-3633754
fax: 050-3637337
E-mail: ebwinkel@rug.nl
Internet: http://www.rug.nl/wewi/eb

## Editor's preface

With more than 40 years of experience in the Dutch and West European gas market, the Netherlands can clearly be regarded as a knowledge centre for natural gas. In the light of this large pool of expertise and the very swiftly changing energy markets, N.V. Nederlandse Gasunie and the nearly 400 year old University of Groningen decided to join forces and, with support from Gazprom, founded the Energy Delta Institute (EDI). EDI's main goal is to provide support for the training and development of the energy managers of the future. Therefore EDI has developed training and research programmes, aimed at various management, economical and geopolitical issues related to natural gas.

EDI's courses cover all aspects of the gas value chain. EDI's curriculum ranges from two Executive Master Programmes "Master of Gas Business Management" and "Master of Petroleum Business Engineering" to separate courses, varying from 2 weeks to several days. Experts of the gas business act as lecturers for all these programmes. In addition, highly regarded guest speakers from knowledge institutes around the world also conduct lectures. EDI offers the opportunity to discuss and share experiences with its partners, amongst others Shell, Gasunie, Gazprom, LogicaCMG, Clingendael, the University of Groningen, the Gubkin State University for oil & gas, MGIMO, Oxford, Yale and Stanford. All these partners contribute to the EDI knowledge base - and this network is expanding rapidly. EDI is a small, flexible company aiming to sell knowledge worldwide in a highly competitive global setting.

Against this background, at the request of EDI, the Science Shop of Economics, Management & Organization of the University of Groningen started a masters thesis group-project concerning the market potential of EDI. The Science Shop selected a group of three students with a mix of economics, business administration and economic geography expertise that were willing and capable to write a masters thesis in the framework of the project. These students, Jos Meijerhof, Marika Stegmeijer and Sander Stoter on the one hand analysed the market potential of EDI in three European regions and in North Africa, the Middle East and South-East Asia and on the other hand made a competitor analysis for EDI. The main results of their studies are presented in three reports of which this is one.

During the project the students were advised and supported by EDI. We would like to thank EDI for their time and advice. We would also like to thank the supervisors from the university for coaching the students.

Frans Sijtsma

*(on behalf of the Science Shop Economics, Management & Organization)*

Groningen, December 2005

## Abstract

The Energy Delta Institute, a provider of courses on many subjects related to natural gas, wants to know the market potential of the different national natural gas markets and market players in three European regions. This research uses data about thirty-nine national natural gas markets to make a ranking of countries based on their overall market potential for EDI. It will specify the degree of priority that EDI's marketing department should give to each country and will indicate the differences in market potential in the different European regions. Also, 171 companies from the countries with the highest market potential for EDI are ranked based on company characteristics found to be important in influencing training and development activities in earlier research. The results of this research can be used by EDI's marketing department in setting priorities and deciding which markets to enter and which companies to approach.

# Contents

# Introduction

The Energy Delta Institute (EDI) is an International Business School and Research Centre for natural gas, set up in 2002 by N.V. Nederlandse Gasunie, the Rijksuniversiteit of Groningen, and Gazprom, the world's biggest gas company located in Russia. EDI's main goal is to support organisations over the whole world to obtain knowledge and skills for the development of an economic viable gas market and a sustainable gas industry through an international network of knowledge institutions. The curriculum of EDI, primarily focussed on economical, managerial and geopolitical issues, varies from Master Programmes to courses of 3-5 days to In-company programmes (energydelta.nl).

Currently, EDI is trying to extend its network with several major partners which may insure EDI's existence in the future. Meanwhile, it wants to expand the number of participants in their courses. Until now, most of the participants in the courses offered by EDI are from either the Gasunie, or Gazprom. When a more diverse group of participants would take part in the courses, the exchange of knowledge would be encouraged, and even more participants might want to attend just because they do not want to miss a thing.

To get an overview of the opportunities to expand the number of participants from different countries and companies in three European regions, EDI needs insight in the characteristics of the national natural gas markets and the players on these markets. The research described below will identify the countries to which EDI's marketing department should give highest priority, and ultimately, a ranking of companies with activities related to the (liquid) natural gas based on their potential for EDI. In short, the results of this research will be:

- a raking of European countries based on their market potential for EDI products;
- a quantitative estimate of the differences in market potential of three strategic regions;
- a selection and ranking of companies in six countries based on their market potential for EDI products;
- a database containing the ranking of countries in which the weights of the dimensions can easily be altered to obtain an alternative ranking;
- and databases containing all companies in this research, including various company specific characteristics.

## The scope of the research: Three strategic regions and their countries

Within Europe, EDI identified three strategic regions: West, Central and East. Grouping the European countries in to these regions however, turned out to be problematic. For example, according to Gross (2001) Central Europe is more an intellectual construct than a geographical entity. The United Nations (http://esa.un.org/unpp/index.asp?panel=5) divide Europe in to four regions: Eastern, Northern, Southern and Western. This research uses this division by the UN as a basis for an alternative grouping of countries in to three regions. In comparison to the division by the UN, Northern Europe is split up between Western and Eastern Europe. Figure 1 gives a visual presentation of the division.

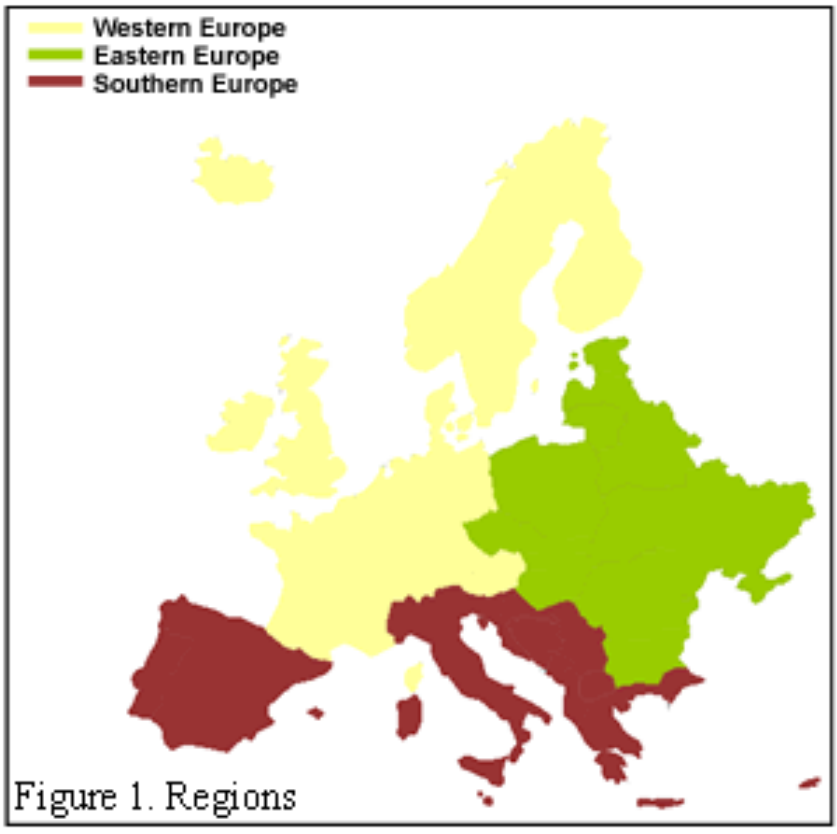

Figure 1. Regions

Western Europe: Norway, Sweden, Finland, Denmark, United Kingdom, Ireland, Iceland, The Netherlands, Germany, Belgium and Luxembourg, France, Austria, Switzerland and Lichtenstein

Eastern Europe: Poland, The Czech Republic, Slovakia, Hungary, Romania, Bulgaria, Estonia, Latvia, Lithuania, Belarus, The Ukraine and Moldova

Southern Europe: Spain, Portugal, Greece, Italy, Albania, Serbia and Montenegro, Bosnia Herzegovina, Croatia, Slovenia, Macedonia, Turkey, Cyprus, Malta

## National gas market characteristics

The research below focuses on a number of quantitative variables which describe the characteristics of the 39 national gas markets mentioned above (Belgium and Luxembourg were put together for data-availability reasons). These quantitative variables allow for ranking the countries and analyzing the differences between the three strategic regions in Europe based on their market potential for EDI products. Sources like BP's *Statistical Review of World Energy 2004*, International Energy Agency's publication *Natural Gas Information 2003*, the CIA's online *World Factbook*, *Eurostat* and the company database of *Amadeus* were used to gather data on natural gas reserves, production, consumption, import, export, training, etcetera. The most interesting outcomes of this data gathering process are discussed below. The whole dataset can be found in table 1.

The European countries examined in this study had a total proved natural gas reserve of seven trillion cubic metres at the end of 2003. Norway, The Netherlands and The Ukraine account for almost 75 percent of these reserves. The United Kingdom produced almost one third of the total of 319,2 billion cubic metres that were produced in the European countries in 2003. Norway and the Netherlands are the other top three gas producing countries. Some of the countries with gas reserves, like Turkey, The Ukraine and Bulgaria can go on producing natural gas at the current rate for a long period of time. Another group of countries however, will be out of natural gas reserves in only a couple of years. The most extreme example being The United Kingdom, which will be out of reserves in six years after the end of 2003.

National natural gas consumption is highest in the United Kingdom, followed by Germany and The Ukraine. Per capita, The Netherlands turn out to have by far the highest natural gas consumption rate. Sweden, on the contrary, has very low levels of natural gas consumption.
Germany, Italy and France are the biggest importers of natural gas by pipeline, while Spain, and again, France and Italy are the biggest importers of liquid natural gas (LNG). The European countries exported a total of 142,41 cubic metres of their own natural gas over 2003, mostly to each other. Norway and The Netherlands alone account for almost 78 percent of these exports.

| Country | Gas reserves Trillion cubic mtr. | Gas production Billion cubic mtr. | Years left | Import by pipeline Billion cubic mtr. | LNG import Billion cubic mtr. | Gas export Billion cubic mtr. | Gas consumption Billion cubic mtr. | Per capita gas cons. Cubic mtr. | Number of companies | Providing CVT (%) | CVT costs (PPS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 0,0033 | 0,030 | 110,0 | | | | 0,03 | 9 | 0 | | |
| Austria | 0,0249 | 1,731 | 14,4 | 7,40 | | 0,40 | 8,60 | 1060 | 39 | 94 | 1287 |
| Belarus | | 0,200 | 0,0 | 17,80 | | | 16,40 | 1657 | 0 | | |
| Belgium and Luxembourg | | | | 15,85 | 3,15 | 1,60 | 16,00 | 1475 | 34 | 100 | 1487 |
| Bosnia Herzegovina | | | | 0,30 | | | 0,30 | 71 | 8 | | |
| Bulgaria | 0,0037 | 0,004 | 931,0 | 2,80 | | | 2,90 | 372 | 45 | 43 | 2092 |
| Croatia | 0,0344 | 1,760 | 19,5 | 1,14 | | | 2,84 | 645 | 20 | | |
| Cyprus | | | | | | | | | 1 | | |
| Czech Republic | 0,0031 | 0,160 | 19,1 | 9,73 | | | 9,00 | 881 | 161 | 83 | 2801 |
| Denmark | 0,0900 | 7,900 | 11,4 | | | 3,56 | 5,20 | 963 | 19 | 100 | 2240 |
| Estonia | | | | 1,27 | | | 1,27 | 941 | 10 | 71 | 779 |
| Finland | | 0,000 | | 4,84 | | | 4,50 | 862 | 42 | 100 | 1835 |
| France | 0,0129 | 1,898 | 6,8 | 31,80 | 9,87 | 0,77 | 43,80 | 731 | 173 | 96 | 2484 |
| Germany | 0,2100 | 17,700 | 11,9 | 86,75 | | 10,34 | 85,50 | 1036 | 388 | 95 | 1860 |
| Greece | 0,0003 | 0,035 | 7,3 | 1,50 | 0,55 | | 2,30 | 208 | 15 | 9 | 2895 |
| Hungary | 0,0505 | 3,231 | 15,6 | 10,30 | | | 13,00 | 1285 | 21 | 55 | 1438 |
| Iceland | | | | | | | | | 0 | | |
| Ireland | 0,0099 | 0,815 | 12,2 | 3,70 | | | 4,10 | 1018 | 10 | 100 | 2381 |
| Italy | 0,2200 | 13,700 | 16,1 | 55,92 | 5,52 | | 71,70 | 1239 | 146 | 64 | 1244 |
| Latvia | | | | 1,70 | | | 1,70 | 733 | 10 | 48 | 448 |
| Liechtenstein | | | | | | | | | 0 | | |
| Lithuania | | | | 2,76 | | | 3,10 | 900 | 9 | 51 | 639 |
| Macedonia | | | | | | | | | 0 | | |
| Malta | | | | | | | | | 0 | | |
| Moldova | | | | 2,05 | | | 2,05 | 477 | 0 | | |
| Netherlands | 1,6700 | 58,300 | 28,6 | 12,93 | | 42,17 | 39,30 | 2417 | 89 | 96 | 2683 |
| Norway | 2,4600 | 73,400 | 33,5 | | | 68,37 | 4,30 | 939 | 45 | 100 | |
| Poland | 0,1200 | 4,000 | 30,0 | 8,61 | | | 12,50 | 327 | 167 | 47 | 511 |
| Portugal | | 0,000 | | 2,50 | 0,85 | | 3,00 | 286 | 9 | 53 | 1572 |
| Romania | 0,3100 | 12,600 | 24,6 | 5,80 | | | 18,40 | 847 | 303 | 20 | 1189 |
| Serbia and Montenegro | 0,0241 | 0,600 | 40,1 | | | | 0,60 | 57 | 24 | | |
| Slovakia | 0,0075 | 0,292 | 25,7 | 7,30 | | | 7,10 | 1320 | 41 | | |
| Slovenia | | | | 1,10 | | | 1,04 | 521 | 11 | 55 | 2311 |
| Spain | 0,0003 | 0,516 | 0,5 | 8,69 | 15,04 | | 23,80 | 562 | 61 | 42 | 2569 |
| Sweden | | | | 1,25 | | | 0,80 | 89 | 43 | 99 | 2871 |
| Switzerland | | | | 2,92 | | | 2,90 | 394 | 51 | | |
| Turkey | 0,0087 | 0,000 | 27836,5 | 16,19 | 4,99 | | 21,00 | 290 | 0 | | |
| Ukraine | 1,1100 | 17,700 | 62,6 | | | | 67,50 | 1400 | 244 | | |
| United Kingdom | 0,6300 | 102,700 | 6,1 | 7,51 | | 15,20 | 95,30 | 1598 | 314 | 100 | 1445 |

Table 1. National gas market characteristics

The data for the 'number of companies' characteristic in table 1 was found using the database of Amadeus, which contains financial information of over 250.000 European companies. In this database, a search was done for companies with at least two hundred employees and the word 'gas' in their English trade description or national activity labels. Germany, The United Kingdom and The Ukraine turn out to host the most companies satisfying this description.

CVT stands for Continual Vocational Training and can be described as permanent education and training that provides job-related skills and knowledge (Oxford Reference online). In Eurostat, statistics about the percentage of companies providing CVT in the different National Accounts in Europe (NACE) can be found. NACE is a European system to structure the economy into statistical sectors (Eurostat, 2005). Two CVT characteristics are listed in table 1. The data for NACE 40, containing the 'manufacture and distribution of gaseous fuels through mains' sector, was used as input for the 'percentage of companies providing CVT' characteristic. Notice that in the Scandinavian countries nearly all companies provide CVT. The second characteristic, 'CVT costs' measures the costs of CVT courses per participant in Purchasing Power Standards (PPS) for the same NACE. Greece and Sweden are the highest scoring countries on this characteristic.

## Ranking the countries: The dimensions

To rank the countries based on their market potential for EDI products, five dimensions were formed, considered conveying the most important characteristics of national gas markets for EDI. *Dimension 1* uses the reserves and production variables to indicate if a country is, or is able to be, active in the production of (liquid) natural gas. *Dimension 2* uses the import and export variables to indicate the level of flows of gas from or to the different European countries. The consumption and per capita consumption variables serve as input for *dimension 3* and give an indication of the size of the natural gas market based on national consumption. *Dimension 4* gives an indication of the importance of training and development in the various countries, using the CVT providing and CVT spending variables. Although data on these two variables was not available for every country in the research, this dimension is still used in the ranking because for the largest part, countries with the highest index numbers on the other dimension do have the appropriate data available. The last dimension, *dimension 5*, indicates which counties have the highest number of companies EDI can potentially do business with. To determine the overall market potential of the countries from these five

dimensions, weights were given to each dimension. *Dimension 1* is given the highest weight, because it is the best indicator for the degree of activity on (future) national natural gas markets. *Dimensions 2 and 3* are considered to be of medium importance, while *dimensions 4 and 5* are the least important for the overall market potential of a country.

| Variables | Dimension | Weight |
|---|---|---|
| Reserves<br>Production | Dimension 1 | 3 |
| Import<br>Export | Dimension 2 | 2 |
| Consumption<br>Per capita consumption | Dimension 3 | 2 |
| CVT Providing<br>CVT Spending | Dimension 4 | 1 |
| Number of companies | Dimension 5 | 1 |

Table 2. Country ranking dimensions

## Ranking the countries: The methodology

Selecting countries for further research requires some way of estimating the market potential for EDI products in the various countries. As explained above, five dimensions are used for making a ranking of countries based on their overall market potential for EDI products. These dimensions are formed using nine variables, as shown in table **2**. For each of the variables national index numbers are calculated using formula **1** (Cavusgil et al., 2003)**.** The country with the highest score on a variable will get an index number of 100, while the lowest scoring country gets an index number of 1.

Formula 1. $$X'_{ij} = \left[\frac{X_{ij} - \min_i}{R_i}(99)\right] + 1$$

In the above formula **1**, Xij is the average score of country j on variable i; X´ij is the scaled final value of country j for the variable i; MINi is the minimum value for variable i; and Ri is the range of variable I. After giving the countries an index number on every variable in table 2, the index numbers of variables forming a dimension are summed up. This sum of index numbers is then rescaled using again, formula **1**. Next, the index numbers on the five dimensions are multiplied by the weights given in table **2** and the sum of these multiplications is divided by the sum of the weights (formula **2**). Finally, these numbers are rescaled using formula 1, giving the country with the highest market potential for EDI product an index number of 100, and the countries almost without market potential an index number of 1.

Formula 2. $MP_j = (\Sigma(X'_{ij} \cdot W_i)) / \Sigma(W_i)$

| Country | Dimension 1 | Dimension 2 | Dimension 3 | Dimension 4 | Dimension 5 | Market potential |
|---|---|---|---|---|---|---|
| Netherlands | 73 | 67 | 86 | 95 | 24 | 100 |
| United Kingdom | 73 | 28 | 100 | 76 | 81 | 98 |
| Norway | 100 | 87 | 26 | 51 | 12 | 92 |
| Germany | 16 | 100 | 80 | 81 | 100 | 91 |
| Italy | 14 | 62 | 76 | 55 | 38 | 64 |
| Ukraine | 37 | 1 | 78 | 1 | 63 | 52 |
| France | 3 | 44 | 47 | 92 | 45 | 51 |
| Romania | 15 | 7 | 34 | 32 | 78 | 36 |
| Belgium and Luxembourg | 1 | 22 | 47 | 77 | 10 | 35 |
| Czech Republic | 1 | 11 | 28 | 91 | 42 | 33 |
| Spain | 1 | 24 | 30 | 67 | 17 | 30 |
| Denmark | 8 | 5 | 28 | 90 | 6 | 29 |
| Hungary | 4 | 11 | 41 | 53 | 6 | 27 |
| Austria | 3 | 9 | 32 | 70 | 11 | 26 |
| Ireland | 2 | 4 | 29 | 92 | 4 | 26 |
| Finland | 1 | 6 | 25 | 83 | 12 | 25 |
| Poland | 6 | 10 | 17 | 33 | 44 | 23 |
| Belarus | 1 | 18 | 52 | 1 | 1 | 22 |
| Sweden | 1 | 2 | 4 | 100 | 12 | 19 |
| Estonia | 1 | 2 | 25 | 50 | 4 | 17 |
| Slovenia | 1 | 2 | 14 | 68 | 4 | 16 |
| Slovakia | 1 | 8 | 38 | 1 | 11 | 16 |
| Bulgaria | 1 | 4 | 12 | 59 | 12 | 16 |
| Lithuania | 1 | 4 | 25 | 37 | 3 | 15 |
| Turkey | 1 | 22 | 22 | 1 | 1 | 14 |
| Portugal | 1 | 4 | 10 | 55 | 3 | 14 |
| Latvia | 1 | 3 | 20 | 33 | 4 | 13 |
| Greece | 1 | 3 | 8 | 56 | 5 | 13 |
| Croatia | 3 | 2 | 19 | 1 | 6 | 8 |
| Switzerland | 1 | 4 | 12 | 1 | 14 | 7 |
| Moldova | 1 | 3 | 14 | 1 | 1 | 6 |
| Serbia and Montenegro | 2 | 1 | 3 | 1 | 7 | 3 |
| Bosnia Herzegovina | 1 | 1 | 3 | 1 | 3 | 2 |
| Albania | 1 | 1 | 1 | 1 | 1 | 1 |
| Cyprus | 1 | 1 | 1 | 1 | 1 | 1 |
| Iceland | 1 | 1 | 1 | 1 | 1 | 1 |
| Lichtenstein | 1 | 1 | 1 | 1 | 1 | 1 |
| Macedonia | 1 | 1 | 1 | 1 | 1 | 1 |
| Malta | 1 | 1 | 1 | 1 | 1 | 1 |

Table 3. Country ranking

## Ranking the Countries: The results

## National and regional market potential

In table 3, all countries in this research are ranked based on their overall market potential for EDI products. The graph presented in figure 2 concerning the countries and their market potential is used for the division of the countries in to groups based on the priority they should get from the marketing department of EDI.

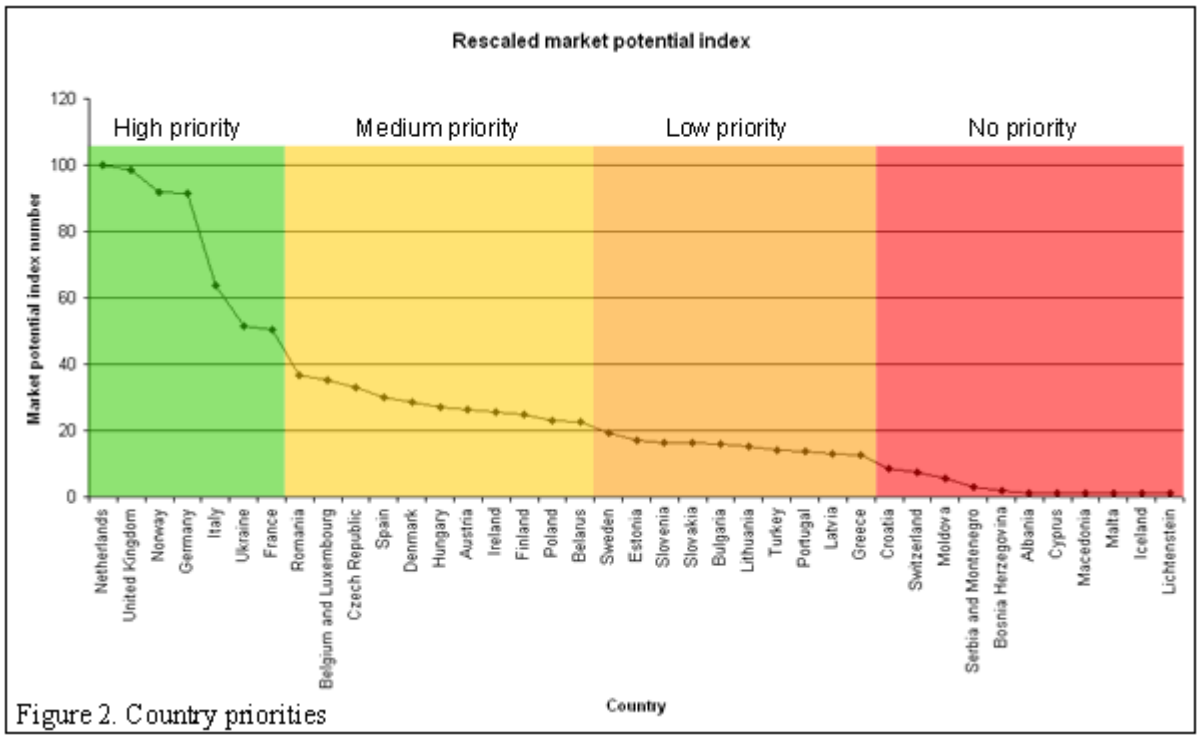

Figure 2. Country priorities

The first group, with overall market potential index numbers higher than 50, consists of The Netherlands, The United Kingdom, Norway, Germany, Italy, The Ukraine and France. This is the group of countries from which EDI's marketing department will most likely be able to attract the highest number of participants. In other words, these are the countries the department should give the highest priority to. The rest of the countries are divided in to three other groups. The average overall market potential index number is almost 28. The group of countries clustered around this average is therefore given a medium priority status. A low priority status is given to the countries falling just outside the medium priority group, but with an index number higher than 10. Countries with index number lower than 10 are given a no priority status. These are the countries in which the marketing department of EDI is the least likely to find participants for their courses.

After ranking the countries based on their national market potential we now take a look at the differences in regional market potential. In figure 3, a map is shown giving a visual presentation of the results from figure 2. When this map is compared to the division in regions from figure 1, the Western Europe region seems to offer the best opportunities for EDI's marketing department to attract participants from.

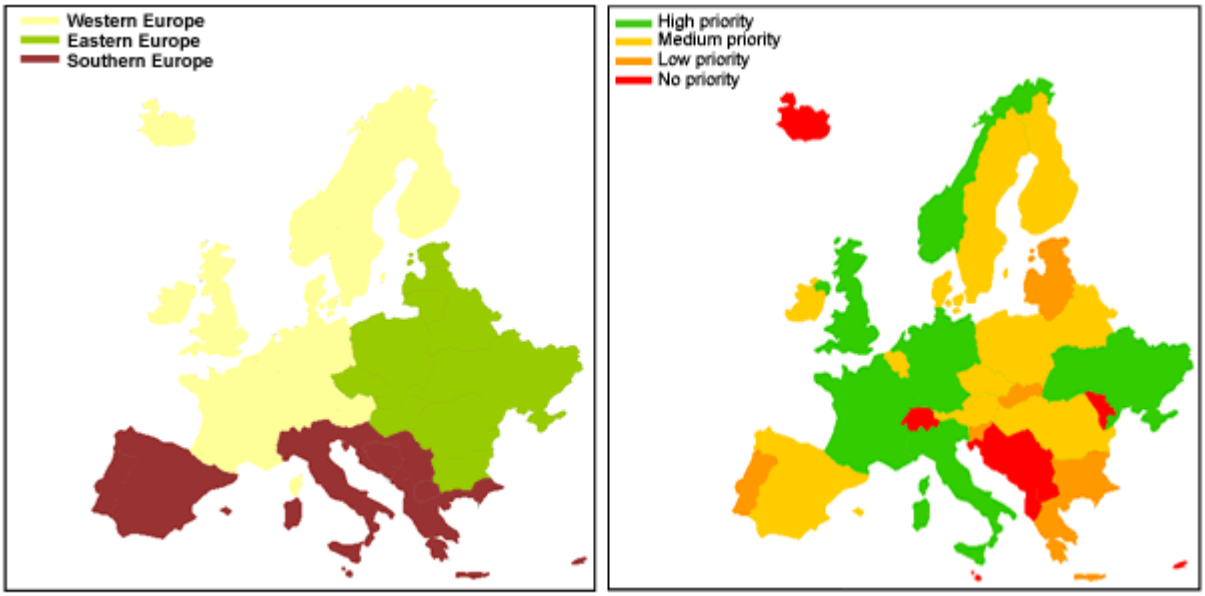


Figure 3. Regions and priorities

Indeed, calculation shows that the average market potential index number of Western Europe is almost 43, while Eastern Europe has an average of 23,1 and Southern Europe of only 12,9. This means that Western Europe has an average market potential index number that is almost 15 points higher than the average in all the European countries. This high average is caused by the fact that no less than four countries (The Netherlands, The United Kingdom, Norway, and Germany) from the Western European region have index numbers higher than 90, while the highest ranked country from one of the other two regions has an index number of only 64. With respect to the ranking in table 3, and the assigning of priorities in figure 2, it should be remembered that these are based only on a number of the national gas market characteristics from table 1, and not on the actual demand for knowledge in the field of activities related to the natural gas market. In Eastern Europe for example, the lack of knowledge might be larger than in the other two regions, making it more interesting as a potential market. Also, there are countries that do not have a national gas market of importance, but do, or will, serve an important role in the transportation of (liquid) natural gas. These countries may not be ranked high in table **3**, but might be interesting for EDI. Also notice that if data was available for

Turkey and Belarus on the CVT characteristics, both countries would be ranked higher in table 3.

## Further research: where?

The next part of the research will focus on companies with activities related to the natural gas market in a number of European countries. Figure 2 showed that there are seven countries from which EDI's marketing department is likely to be able to attract the most participants. Except The Netherlands, these are the countries in which we will now look for the most attractive companies for EDI's marketing department to approach. The Netherlands, being EDI's home market, was not selected because EDI is considered to have enough knowledge about the most important companies with activities related to the (liquid) natural gas market. The selection contains at least one country from each of the three regions. This might give some insights that would have stayed unknown if all the countries were from the same region. Below is a short description of the natural gas markets in the selected countries. This description was comprised using the same sources that were consulted to create table 1.

*United Kingdom*

At present, the United Kingdom is the largest producer, and the largest consumer of natural gas. However, they will run out of natural gas reserves in only a couple of years when they continue to produce at the current rate. Not surprisingly, The United Kingdom is currently working to ensure security of supply in the future by building interconnector pipelines to The Netherlands and Norway, and investigating the possibilities of importing LNG (Ofgem, 2005). In 2003, the UK imported only 7,51 billion cubic metres of the total of 95,30 billion cubic metres consumed. In 2002, the United Kingdom imported natural gas from Norway, and exported gas to Belgium, Ireland and the Netherlands.

*Norway*

Norway has got the biggest gas reserves of all the countries in this study. It produced 73,4 billion cubic metres of natural gas in 2003, making it the second biggest producer of natural gas in Europe. In 2002, Norway exported natural gas to Germany, France, Belgium, Italy, The Netherlands, Spain, The United Kingdom, The Czech Republic and Poland. National natural gas consumption in Norway is very low: only 4300 million cubic metres in 2003. When one takes the size of the population in to account however, Norway turns out to have a per capita natural gas

consumption of 939 cubic metres, which is about the average of all countries in this study.

*Germany*

Together with The Ukraine, Germany comes fourth in the list of biggest natural gas producers. They can continue to produce at the current rate for about ten more years. Germany is the second biggest consumer, and the largest importer of natural gas. Germany has no less than 25293 kilometres of pipeline, more than any of the other countries examined. In 2002, Germany imported natural gas from the former USSR (Russia), Norway and the Netherlands.

*Italy*

On the dimensions natural gas reserves and natural gas production Italy is ranked sixth. National consumption was 71,7 billion cubic metres in 2003, which ranks Italy third on this dimension. In 2002, Italy imported liquid natural gas from Algeria and Nigeria, and natural gas by pipeline from the former USSR (Russia), Algeria, The Netherlands and Norway.

*The Ukraine*

The Ukraine is ranked third on the natural gas reserves dimension, and fourth in the natural gas production dimension. They are also ranked fourth on the natural gas consumption dimension, with 67,5 billion cubic metres consumed during 2003. Their low ranking on both the CVT dimensions is caused by the lack of the appropriate data.

*France*

Although France only produces a small amount of natural gas and has very little reserves, it is still ranked sixth in table 2. This is mainly caused by the size of the country and its population. On the dimensions gas consumption and gas imports France is ranked third. Per capita gas consumption however, is not very high: only 731 cubic metres. In 2002, France imported liquid natural gas from Algeria, Nigeria and Oman and natural gas by pipeline from Norway, the former USSR (Russia), The Netherlands and The United Kingdom.

## The next step: selecting companies

After selecting the countries to which EDI should give priority, the research will now focus on finding and selecting companies which perform activities related to the (liquid) natural gas market. In the process of country ranking, the dimension 'number of companies' was used. The data for this dimension was found by using the database of Amadeus, which contains financial information of over 250.000 European companies. In this database, a search was done for companies with at least two hundred employees and the word 'gas' in their English trade description or national activity labels. This resulted in a total of 1310 companies in the six selected countries. However, further research concerning this list of companies from the first search showed that a large number of companies is not active in the (liquid) natural gas industry. Most of them were from the Nace's 4010 (production and distribution of electricity), 4011 (production of electricity), and 5151 (wholesale of chemical products). These companies were removed from the list based on their description in Amadeus or, in case of any doubt, the information on their websites. What remains is a list of 172 companies from six countries, mainly from one of the following five NACE's:

- 1110 (extraction of crude petroleum and natural gas);
- 1120 (service activities incidental to oil and gas extraction excluding surveying);
- 4021 (manufacture of gas);
- 4022 (distribution and trade of gaseous fuels through mains);
- and 5151 (wholesale of solid, liquid and gaseous fuels and related products).

## Ranking the companies: The dimensions

To rank companies based on their market potential, it is important to know which factors influence training and development activities at the company level. According to research by Smith and Hayton (1999), the most influential factors are company size, industry sector and workplace change. The factor 'workplace change' will not be taken into account in this research because of the extensive company level investigation that should be done to obtain useful data, and the limited time.

For the second factor, 'industry sector', Eurostat provides data on the hours spent on CVT in specific groups of NACE in the EU 25. In the group with NACE 1110 and 1120, employees spent an average of 30 hours on CVT over the year 1999. Employees in the group with NACE

4011 and 4021 spent 36 hours on CVT, while in the group with NACE 5151 employees spent only 19 hours on CVT. These industry sector specific numbers, although interesting to keep in mind when looking at the databases, will not be used in making the ranking, because of the differences that will certainly exist between companies in the same NACE. They are an average of an average of an average, and therefore too little company specific for this research.

The third factor, 'company size', is the most important one according to Smith and Hayton (1999). Not only is company size very strongly associated with both the volume and diversity of training, but it is also related to three important factors that determine the ability of a company to provide training and development programs:

- Resources: The larger the company, the greater the economies of scale that can be achieved in training and the better the support of this training with high investments in training infrastructure.
- The nature of the workforce: Larger companies have more skilled and professional employees who require higher levels of training. The demand for training is greater in proportional terms in larger companies.
- Networking: Small companies have particular problems in accessing training providers whereas larger companies, particularly those employing training specialists, often have well-developed relationships with a network of training providers and with the training authorities.

Another study by Black, Noel and Wang (1999) found that larger companies are more likely to purchase outside training courses and that subsidiaries of large companies turn out to provide more off-site training and development than independent companies. In accordance with these findings, Westhead (1998) has shown that the percentage of companies providing formal training is higher among subsidiaries of other organisations, than among independent companies.

The above shows that the single most important factor in ranking the companies in this research is company size, which is measured by the number of employees. Company size is related to other factors that determine the ability of a company to provide training and development programs. Interesting to keep in mind is that subsidiaries of large firms tent to

provide more training and development programs than independent firms, that subsidiaries provide more off-site training than independent companies, and that the average number of hours spent on CVT differs from 19 to 36 between the different Nace's.

## Ranking the companies: The methodology

The search for companies, as explained above, resulted in a list of 171 companies. Of these companies, 51 are from The United Kingdom, 22 from Norway, 33 from Germany, 18 from Italy, 35 from The Ukraine and 13 from France. A database of these companies was created including dimensions like company name, ultimate owner, NACE code, number of employees, operating revenue, profit margin, number of subsidiaries and the English trade description. In table 4, these companies are ranked per country based only on the number of employees. The research by Smith and Hayton (1999) and Black, Noel and Wang (1999) in combination with the availability of company specific information for this research has lead to the conclusion that this is the single most important dimension for EDI's marketing department to take notice of. This does mean that changes within companies, existing (personal) relationships, contracts, and other factors that might influence the choice of which company to approach were not taken into account. It is therefore that table 4, and especially the company databases, contain some additional company specific information.

## Ranking the companies: The results

The rankings in table 4 show that in each of the six selected countries there is at least one very large company. Another interesting result is that the United Kingdom not only has the highest number of companies that EDI's marketing department might approach, but also has no less than thirteen companies with more than 10.000 employees.

In Norway, Statoil ASA, an integrated oil and gas company with substantial international activities, has by far the highest number of employees, the highest operating revenue and the highest number of subsidiaries. In Germany, E.ON AG, an electricity and gas company has over 60.000 employees. In The United Kingdom, BP has more than 100.000 employees, while Electricite de France of France even has more than 160.000 employees worldwide. This makes it the largest company in this research. Another large company in France is Gaz de France, which is the leading natural gas supplier. In the Ukraine there is a large group of companies with between 1.000 and 6.000 employees. Almost all of these companies are

ultimately owned by The State of Ukraine. Saipem, the largest company identified in Italy, mainly offers offshore and onshore construction to major players on the gas and oil markets.

Table 4.

| NORWAY<br>Company name | NACE Rev.1.1, primary code | Last year | Operating revenue / turnover th USD Latest Year | Number of subsidaries | Number of employees Latest Year |
|---|---|---|---|---|---|
| STATOIL ASA | 1110 | 2003 | 37442964,07 | 104 | 11077 |
| PROSAFE DRILLING SERVICES AS | 1120 | 2003 | 215216,7665 | 3 | 1306 |
| AKER STORD AS | 3511 | 2003 | 310700,8982 | 4 | 1169 |
| ESSO NORGE AS | 5151 | 2003 | 3633383,234 | 5 | 1149 |
| BAKER HUGHES NORGE AS | 1120 | 2003 | 371155,2395 | 0 | 1045 |
| NORSKE SHELL AS | 1110 | 2003 | 2612125,749 | 21 | 930 |
| PETROLEUM ENGINEERING SERVICES AS | 1120 | 2003 | 222276,9461 | 0 | 862 |
| SMEDVIG OFFSHORE AS | 1120 | 2003 | 195671,7066 | 2 | 848 |
| SMEDVIG PRODRILL AS | 1120 | 2003 | 125489,3713 | 0 | 786 |
| ODFJELL DRILLING MANAGEMENT AS | 1120 | 2003 | 134706,1377 | 1 | 771 |
| STOLT OFFSHORE AS | 1120 | 2003 | 272343,0796 | 2 | 723 |
| KVÆRNER OILFIELD PRODUCTS AS | 3511 | 2003 | 333739,521 | 0 | 675 |
| SCHLUMBERGER NORGE AS | 1120 | 2003 | 257467,6647 | 0 | 616 |
| BP NORGE AS | 1110 | 2003 | 959477,0958 | 0 | 613 |
| AKER VERDAL AS | 3511 | 2003 | 126616,1677 | 0 | 598 |
| DOLPHIN AS | 1120 | 2003 | 173800,7485 | 1 | 402 |
| CHC HELIKOPTER SERVICE AS | 6220 | 2004 | 173345,4942 | 1 | 378 |
| MARITIME WELL SERVICE AS | 1120 | 2003 | 72619,31138 | 1 | 336 |
| RIEBER SHIPPING AS | 1120 | 2003 | 4135,479042 | 0 | 318 |
| MAERSK CONTRACTORS NORGE AS | 1120 | 2003 | 92434,73054 | 1 | 310 |
| TOTAL E&P NORGE AS | 1110 | 2003 | 4523445,21 | 1 | 308 |
| WEATHERFORD NORGE AS | 1120 | 2003 | 74510,32934 | 4 | 244 |

| GERMANY<br>Company name | NACE Rev.1.1, primary code | Last year | Operating revenue / turnover th USD Latest Year | Number of subsidaries | Number of employees Latest Year |
|---|---|---|---|---|---|
| E.ON AG | 7415 | 2003 | 60138676,64 | 100 | 64969 |
| ENERGIE BADEN-WÜRTTEMBERG AG | 4011 | 2003 | 14270558,37 | 118 | 34719 |
| STADTWERKE KÖLN GMBH | 4011 | 2003 | 3417332,054 | 11 | 10120 |
| E.ON RUHRGAS AG | 4021 | 2002 | 12617978,94 | 51 | 8749 |
| STADTWERKE MÜNCHEN GMBH | 4011 | 2003 | 2875727,8 | 14 | 7706 |
| MVV ENERGIE AG | 4011 | 2003 | 2300181,776 | 110 | 5654 |
| NECKARWERKE STUTTGART AG | 4013 | 2002 | 2621754,268 | 38 | 5259 |
| TOTAL DEUTSCHLAND GMBH | 5151 | 2002 | 12869667,35 | 19 | 5039 |
| VERSORGUNGS- UND VERKEHRSGESELLSCHAFT HANNOVER MBH | 7415 | 2003 | 2102340,326 | 3 | 5024 |
| STÄDTISCHE WERKE NÜRNBERG GMBH | 7487 | 2003 | 1697595,261 | 4 | 4956 |
| HAMBURGISCHE ELECTRICITÄTS-WERKE AG | 4011 | 2003 | 3290728,368 | 9 | 3874 |
| RWE RHEIN-RUHR AKTIENGESELLSCHAFT | 4011 | 2003 | 5481516,097 | 27 | 3624 |
| ENVIA MITTELDEUTSCHE ENERGIE AG | 4011 | 2003 | 2593099,006 | 30 | 3579 |
| EWE AKTIENGESELLSCHAFT | 4011 | 2003 | 3777359,587 | 49 | 3488 |
| E.ON BAYERN AG | 4011 | 2003 | 3479160,615 | 8 | 3405 |
| RWE ENERGY AKTIENGESELLSCHAFT | 4011 | 2003 | 5482652,791 | 20 | 3181 |
| GEW RHEINENERGIE AG | 4100 | 2003 | 2183555,831 | 12 | 2942 |
| STADTWERKE HANNOVER AG | 4011 | 2003 | 1814658,297 | 17 | 2933 |
| N-ERGIE AKTIENGESELLSCHAFT | 4011 | 2003 | 1542475,719 | 38 | 2832 |
| E.ON HANSE AG | 4011 | 2003 | 3166057,062 | 26 | 2795 |
| SWM VERSORGUNG | 4013 | 2002 | 1809018,835 | 0 | 2769 |
| AVACON AG | 4013 | 2002 | 2468250,556 | 35 | 2677 |
| E.DIS AKTIENGESELLSCHAFT | 4013 | 2003 | 2078587,216 | 27 | 2379 |
| SÜWAG ENERGIE AG | 4011 | 2003 | 1110713,97 | 7 | 1814 |
| GASAG BERLINER GASWERKE AG | 4021 | 2003 | 1257377,774 | 6 | 1748 |
| WINTERSHALL AG | 1110 | 2003 | 6812240,929 | 44 | 1602 |
| SHELL DIRECT GMBH | 5151 | 2002 | 3563488,401 | 0 | 1463 |
| ESSO DEUTSCHLAND GMBH | 2320 | 2003 | 13423175,92 | 23 | 988 |
| RWE GAS AG | 4021 | 2003 | 2339255,087 | 18 | 919 |
| RWE DEA AG | 1110 | 2003 | 1766927,264 | 12 | 914 |
| VNG - VERBUNDNETZ GAS AG | 4022 | 2003 | 4248180,659 | 8 | 683 |
| THYSSENGAS GMBH | 4022 | 2003 | 1832255,579 | 9 | 368 |
| BEB ERDGAS UND ERDÖL GMBH | 1110 | 2003 | 2618768,352 | 17 | 355 |

| UNITED KINGDOM<br>Company name | NACE Rev.1.1, primary code | Last year | Operating revenue / turnover th USD Latest Year | Number of subsidaries | Number of employees Latest Year |
|---|---|---|---|---|---|
| BP P.L.C. (BP) | 2320 | 2004 | 294627413,1 | 164 | 104200 |
| AMEC P L C | 4521 | 2003 | 7893628,413 | 152 | 45901 |
| CENTRICA PLC | 4021 | 2004 | 35333976,83 | 34 | 43414 |
| BHP BILLITON PLC | 1450 | 2004 | 22765730,02 | 72 | 35070 |
| NATIONAL GRID TRANSCO PLC | 4011 | 2003 | 16571271,33 | 22 | 24527 |
| KELLOGG BROWN & ROOT HOLDINGS LIMITED | 7415 | 2002 | 2379567,844 | 3 | 15448 |
| SCOTTISH POWER PLC | 4011 | 2003 | 10634745,92 | 36 | 14821 |
| LATTICE GROUP PLC | 4021 | 2003 | 5923683,728 | 16 | 14146 |
| BRITISH GAS TRADING LIMITED | 4022 | 2003 | 14335987,86 | 3 | 13174 |
| TRANSCO PLC (BG) | 4021 | 2003 | 5727389,47 | 15 | 11792 |
| TRANSCO HOLDINGS PLC | 4021 | 2003 | 5727389,47 | 3 | 11792 |
| JOHN WOOD GROUP P.L.C. | 1120 | 2003 | 1699912,547 | 70 | 11171 |
| EDF ENERGY PLC | 4011 | 2003 | 6258076,031 | 61 | 10457 |
| SCOTTISH AND SOUTHERN ENERGY PLC | 4011 | 2003 | 9400843,882 | 31 | 9560 |
| SCOTTISH POWER UK HOLDINGS LIMITED | 7415 | 2003 | 5752522,473 | 4 | 7736 |
| TOTAL HOLDINGS UK LIMITED | 7415 | 2003 | 18665000,89 | 18 | 7412 |
| POWERGEN LIMITED | 4011 | 2003 | 12595038,37 | 9 | 7357 |
| TEXACO LIMITED | 2320 | 2003 | 13499014,81 | 33 | 4914 |
| BG GROUP PLC | 1110 | 2004 | 7880308,88 | 29 | 4836 |
| ESSO UK LIMITED | 1110 | 2003 | 12052114,94 | 5 | 4836 |
| TOTAL UK LIMITED | 5151 | 2003 | 5672887,739 | 16 | 4712 |
| BG ENERGY HOLDINGS LIMITED | 1110 | 2003 | 6401927,539 | 39 | 4593 |
| FOSTER WHEELER EUROPE LIMITED | 7415 | 2003 | 1332984,116 | 1 | 4422 |
| BP EXPLORATION OPERATING COMPANY LIMITED | 1110 | 2003 | 4090665,715 | 34 | 3688 |
| SHELL U.K.LIMITED | 1110 | 2003 | 15157951,1 | 42 | 3526 |
| ESSO PETROLEUM COMPANY LIMITED | 1110 | 2003 | 6595395,324 | 12 | 3314 |
| COSTAIN GROUP PLC | 4521 | 2004 | 1299613,9 | 32 | 3154 |
| SCOTTISHPOWER ENERGY RETAIL LIMITED | 4012 | 2003 | 3332416,07 | 2 | 2452 |
| NATIONAL GRID HOLDINGS ONE PLC | 4011 | 2003 | 2801320,859 | 3 | 2363 |
| RWE NPOWER PLC | 4011 | 2003 | 2020346,243 | 42 | 2335 |
| CONOCOPHILLIPS HOLDINGS LIMITED | 7415 | 2003 | 11913974,66 | 3 | 1908 |
| CONOCOPHILLIPS (U.K.) LIMITED | 1110 | 2003 | 9441906,122 | 14 | 1709 |
| SEEBOARD ENERGY LIMITED | 4021 | 2003 | 1016062,823 | 1 | 1700 |
| ATTOCK OIL COMPANY LIMITED(THE) | 1110 | 2004 | 589124,4089 | 0 | 1520 |
| NPOWER LIMITED | 4012 | 2003 | 2744779,582 | 20 | 1437 |
| CONOCOPHILLIPS LIMITED | 1110 | 2003 | 5473317,865 | 8 | 992 |
| CAIRN ENERGY PLC | 1110 | 2003 | 278090,3088 | 18 | 499 |
| JACOBS CATALYTIC (UK) LIMITED | 1110 | 2003 | 27415,44075 | 0 | 458 |
| AMERADA HESS LIMITED | 1110 | 2003 | 1323062,645 | 7 | 419 |
| RIGBLAST ENERGY SERVICES LIMITED | 1110 | 2003 | 57720,86382 | 9 | 414 |
| JKX OIL & GAS PLC | 1110 | 2003 | 36798,14385 | 22 | 364 |
| FORTUNE OIL PLC | 1110 | 2003 | 83034,08888 | 3 | 362 |
| SHELL TRADING INTERNATIONAL LIMITED | 5151 | 2003 | 41679457,43 | 1 | 327 |
| ENI UK LIMITED | 1110 | 2004 | 2763500 | 11 | 326 |
| HYDROCARBON RESOURCES LIMITED | 1110 | 2003 | 1909905,408 | 0 | 321 |
| TOTAL GAS & POWER LIMITED | 4021 | 2003 | 9758964,84 | 2 | 297 |
| LONDON ENERGY PLC | 9305 | 2003 | 3198822,06 | 5 | 293 |
| APACHE NORTH SEA LIMITED | 1110 | 2003 | 272229,1629 | 1 | 256 |
| PREMIER OIL PLC | 1110 | 2004 | 202579,1506 | 9 | 254 |
| E D F TRADING LIMITED | 5112 | 2003 | 15551461,72 | 3 | 235 |
| BG TUNISIA LIMITED | 1110 | 2003 | 245880,7782 | 0 | 208 |

| FRANCE<br>Company name | NACE Rev.1.1, primary code | Last year | Operating revenue / turnover th USD Latest Year | Number of subsidaries | Number of employees Latest Year |
|---|---|---|---|---|---|
| ELECTRICITE DE FRANCE (E.D.F.) | 4013 | 2003 | 58974197,05 | 121 | 161310 |
| GAZ DE FRANCE (GDF) | 4021 | 2003 | 21386261,16 | 134 | 37853 |
| TOTAL E&P INDONESIE | 1110 | 2003 | 2894968,236 | 2 | 2007 |
| TOTAL E & P FRANCE | 1110 | 2003 | 550277,227 | 0 | 922 |
| TOTAL AUSTRAL | 1110 | 2002 | 253844,5405 | 5 | 776 |
| TOTALGAZ | 5151 | 2003 | 1097372,974 | 6 | 644 |
| GAZ DE BORDEAUX | 4022 | 2003 | 180814,4955 | 0 | 527 |
| GAZ ELECTRICITE DE GRENOBLE (G.E.G.) | 4013 | 2003 | 128125,592 | 3 | 456 |
| ANTARGAZ | 5151 | 2004 | 823594,3763 | 18 | 404 |
| GAZ DE STRASBOURG | 4022 | 2003 | 183708,6528 | 4 | 349 |
| PERENCO | 1110 | 2003 | 51064,07164 | 4 | 275 |
| TOTAL INFRASTRUCTURES GAZ FRANCE | 4022 | 2003 | 823630,5998 | 0 | 229 |
| TOTAL E&P SYRIE | 1110 | 2003 | 494809,0986 | 0 | 215 |

UKRAINE

| Company name | NACE Rev.1.1, primary code | Last year | Operating revenue / turnover th USD Latest Year | Number of subsidaries | Number of employees Latest Year |
|---|---|---|---|---|---|
| UKRNAFTA OAO | 1110 | 2003 | 616109,1625 | 20 | 25116 |
| UKRGAZVIDOBUVANNYA | 1110 | 2003 | 554434,7745 | 13 | 21529 |
| DNIPROPETROVSYKGAZ OAO | 4021 | 2003 | 60380,00563 | 19 | 5469 |
| LYVIVGAZ OAO | 4021 | 2003 | 71975,24149 | 20 | 4942 |
| KIIVOBLGAZ OAO | 4021 | 2003 | 52620,27572 | 20 | 4639 |
| DONECYKOBLGAZ OAO | 4021 | 2003 | 54033,19891 | 20 | 4221 |
| UKRTATNAFTA NAFTOVA KOMPANIA ZAO | 2320 | 2003 | 1237187,846 | 20 | 4110 |
| HARKIVGAZ OAO | 4021 | 2003 | 42473,26268 | 17 | 3947 |
| LUGANSYKGAZ OAO | 4021 | 2003 | 42941,94879 | 9 | 3758 |
| IVANO FRANKIVSYKGAZ OAO | 4021 | 2003 | 27103,25424 | 20 | 3246 |
| CHERNOMORNEFTEGAZ OAO | 1110 | 2003 | 107596,5488 | 5 | 3121 |
| KRIMGAZ OAO | 4021 | 2003 | 20815,90547 | 17 | 2844 |
| CHERNIGIVGAZ OAO | 4021 | 2003 | 43907,34315 | 18 | 2774 |
| VINNICYAGAZ OAO | 4021 | 2003 | 29013,41086 | 20 | 2695 |
| ODESAGAZ OAO | 4021 | 2003 | 65133,45212 | 20 | 2581 |
| POLTAVAGAZ OAO | 4021 | 2003 | 33055,87546 | 14 | 2555 |
| HMELYNICYKGAZ OAO | 4021 | 2003 | 25917,62168 | 19 | 2425 |
| ZHITOMIRGAZ OAO | 4021 | 2003 | 23436,55632 | 20 | 2290 |
| SUMIGAZ OAO | 4021 | 2003 | 35527,71265 | 15 | 2261 |
| TERNOPILYGAZ OAO | 4021 | 2003 | 4973,947294 | 1 | 2172 |
| DNIPROGAZ OAO | 4021 | 2003 | 29883,3349 | 2 | 2158 |
| KIIVGAZ OAO | 4021 | 2003 | 14360,03001 | 4 | 2105 |
| MIKOLAIVGAZ OAO | 4021 | 2003 | 20776,32936 | 14 | 2090 |
| HARKIVMISYKGAZ OAO | 4021 | 2003 | 23260,00188 | 1 | 2077 |
| ZAPORIZHGAZ OAO | 4021 | 2003 | 34415,83044 | 1 | 1860 |
| HERSONGAZ OAO | 4021 | 2003 | 38515,05205 | 20 | 1694 |
| RIVNEGAZ OAO | 4021 | 2003 | 17241,11413 | 11 | 1672 |
| VOLINYGAZ OAO | 4021 | 2003 | 29244,30273 | 14 | 1664 |
| KRIVORIZHGAZ OAO | 4021 | 2003 | 24034,13673 | 2 | 1503 |
| KIROVOGRADGAZ OAO | 4021 | 2003 | 14488,23033 | 11 | 1444 |
| ZAKARPATGAZ OAO | 4021 | 2003 | 17346,71293 | 13 | 1398 |
| DONECYKMISYKGAZ OAO | 4021 | 2003 | 10519,17847 | 0 | 1098 |
| MARIUPOLYGAZ OAO | 4021 | 2003 | 12445,0905 | 2 | 1005 |
| GAZ UKRAINI | 5190 | 2003 | 2173180,156 | 0 | 695 |
| NAFTOGAZ UKRAINI NAK OAO | 1110 | 2003 | 6557846,947 | 51 | 585 |

ITALY

| Company name | NACE Rev.1.1, primary code | Last year | Operating revenue / turnover th USD Latest Year | Number of subsidaries | Number of employees Latest Year |
|---|---|---|---|---|---|
| SAIPEM | 4534 | 2004 | 5946932,549 | 20 | 21323 |
| ACEA | 4011 | 2004 | 2392885,747 | 27 | 5760 |
| SNAMPROGETTI | 2924 | 2002 | 1509781,241 | 28 | 5420 |
| HERA | 4100 | 2004 | 2232446,606 | 70 | 4914 |
| NUOVO PIGNONE | 2911 | 2003 | 2602378,216 | 23 | 4878 |
| SOCIETA' ITALIANA PER IL GAS PER AZIONI | 4021 | 2002 | 857270,6489 | 34 | 4269 |
| ERG | 2320 | 2004 | 12288584,23 | 16 | 3677 |
| SNAM RETE GAS O IN FORMA ABBREVIATA SNAM RG | 4022 | 2003 | 2451469,492 | 1 | 3070 |
| ESSO ITALIANA | 5151 | 2002 | 10729748,52 | 0 | 2921 |
| ASM BRESCIA | 4011 | 2004 | 1685691,13 | 53 | 2139 |
| SARASRAFFINERIE SARDE (SARAS) | 2320 | 2003 | 3889221,617 | 8 | 1917 |
| AZIENDA MEDITERRANEA GAS E ACQUA (A.M.G.A. S.P.A.) | 4022 | 2003 | 488784,6218 | 3 | 1065 |
| CAMUZZI GAZOMETRI | 4022 | 2003 | 292457,4056 | 65 | 1018 |
| AZIENDA GENERALE SERVIZI MUNICIPAL ZZATI DEL COMUNE DI VERONA | 4022 | 2003 | 362079,8969 | 0 | 863 |
| EDISON GAS | 1110 | 2002 | 1440210,37 | 0 | 502 |
| ENEL DISTRIBUZIONE GAS | 4022 | 2002 | 80162,7585 | 2 | 490 |
| ENEL VENDITA GAS | 4022 | 2003 | 1622036,703 | 0 | 263 |
| EDISON ENERGIA | 4011 | 2003 | 1944152,974 | 0 | 261 |

## Conclusion

Aim of this research was to find the differences in market potential between three strategic regions in Europe, and to identify the most lucrative national markets and market players for EDI's marketing department to focus on. Thirty-nine countries were ranked based on five dimensions that characterize the national gas markets. The result is a ranking of countries based on their overall market potential for EDI, with The Netherlands, The United Kingdom, Norway, Germany, Italy, The Ukraine and France as high scoring countries. Off course, these are the countries to which EDI's marketing department should give highest priority. At the regional level, Western Europe is identified as having the highest market potential for EDI, followed by Eastern Europe. Southern Europe turns out to be the region with the lowest market potential.

From six of the countries that should get highest priority from EDI, a total of 171 companies with activities related to the (liquid) natural gas industry was selected. These companies were ranked per country based on their number of employees, which was identified as the single most important dimension for EDI's marketing department to take notice of. The most interesting results are the presence of at least one very large company in each of the countries, the high number of companies with more than 10.000 employees in The United Kingdom, the extreme size of some companies (in particular Electricite de France and BP) and the high number of companies of about the same size in The Ukraine.

In trying to attract a larger and more diverse group of participants to their courses, EDI should primarily focus on countries at the top of the list in table 3. In these countries, EDI needs to approach the companies with the highest number of employees, as they are identified as being the most active in training and development programs for their employees.

## Recommendations

Some recommendations for EDI's marketing department:

- Try to find out what is going on in a company and its surroundings, and approach them with the courses they need at the moment, or in the nearby future.
- Keep track of regional, EU and national level changes in legislation, gas reserves, gas imports, etcetera.
- Divide the companies in the company database in to groups (NACE's) based on their activities, and approach these groups with courses related to their activities.
- Try to find, and understand, the links between companies, for example between RWE from Germany and a number of companies in The Czech Republic, to get in contact with new potential clients.
- Understand the influence of new pipelines and the increasing importance of LNG on national natural gas markets and the players on these markets.

## Limitations

- This research only considers the market for educational programs on the topic of natural gas. The market for research on the same topic was not investigated.
- Only the market potential of 39 countries in three European regions is determined.
- The ranking of countries is based solely on natural gas market characteristics, and not on the actual demand for knowledge in the field of activities related to the (liquid) natural gas market.
- For only six countries a selection of companies with activities related the (liquid) natural gas market is made based solely on information from the company database of Amadeus and the company websites.
- The ranking of companies per country is based solely on the number of employees of the companies. Changes within companies, existing (personal) relationships, contracts, and other factors that might influence the choice of which company to approach were not taken into account.

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| | |
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| Ofgem | http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/11728_sosupdatejune05.pdf |
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